UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,674	10/17/2005	Kaw Yan Chua	15700.0002	1823

27890 7590 01/08/2009

STEPTOE & JOHNSON LLP
1330 CONNECTICUT AVENUE, N.W.
WASHINGTON, DC 20036

EXAMINER	
ROONEY, NORA MAUREEN	
ART UNIT	PAPER NUMBER
1644	

MAIL DATE	DELIVERY MODE
01/08/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/553,674	CHUA ET AL.	
	Examiner	Art Unit	
	NORA M. ROONEY	1644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 September 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *138-169* is/are pending in the application.

4a) Of the above claim(s) *142-146, 151-153 and 158-169* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *138-141,147-150 and 154-157* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 October 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/17/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's response filed on 09/19/2008 is acknowledged.

2. Applicant's election with traverse of Group VII in the reply filed on 05/20/2008 is acknowledged. The traversal is on the ground(s) that:

> "No justification was provided to restrict the molecule into three separate groups. Thus, Applicants propose that Invention 7, 9 and 11 be combined into a single Group for restriction purposes, and that if an election of species is necessary, Applicants elect the invention in which the molecule is an allergen. "

This is not found persuasive because allergens, viral antigens and tumor antigens are different molecules having different structures, physiochemical properties and modes of action. Therefore, each is patentably distinct. Contrary to Applicant's assertion, the Examiner's reasoning for restricting the Groups as set forth in the Restriction Requirements mailed on 03/20/2008 is that the claims lack a special technical feature over the prior art. The reason set forth for the species requirement mailed on 08/20/2008 is that there is an examination and search burden for these patentably distinct species due to their mutually exclusive characteristics. The species require a different field of search (e.g., searching different classes/subclasses or electronic resources, or employing different search queries); and/or the prior art applicable to one species would not likely be applicable to another species; and/or the species are likely to raise different non-prior art issues under 35 U.S.C. 101 and/or 35 U.S.C. 112, first paragraph.

The requirement is still deemed proper and is therefore made FINAL.

3. Claims 142-146, 151-153 and 158-169 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected Groups, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 05/20/2008. It is noted that, contrary to Applicant's assertion in the reply filed on 09/19/2008, claims 151-153 are not drawn to a method for producing polypeptide.

4. Claims 138-141, 147-150 and 154-157 are currently under consideration as they are drawn to a method of preparing polypeptide comprising Der p 2 and the Fve T29A polypeptide (SEQ ID NO: 36), a fragment thereof comprising at least 20 amino acids or a polypeptide having at least 70% sequence identity thereto.

5. Applicant's IDS document filed on 10/17/2005 is acknowledged.

Claim Objections

6. Claims 141, 147, 149 and 155-156 are objected to because of the following informalities:

Claims 141, 149 and 155 refer to sequences "shown in Appendix A." Appendix A lists numerous nucleic acid and amino acid sequences. In addition, such a recitation could refer to a subsequence of any of the sequences of Appendix A.

Claim 148 recites "the method of any Claim 147." However, there is and can only be one claim 147, so it is unclear what Applicant intended by this recitation.

Claim 156 is dependent upon cancelled claim 137.

Correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 138-141, 147-150 and 154-157 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A. Claim 138 recites "an Fve polypeptide"; Claim 140 recites "Der p 1," "Der f 1," "Blo t 1," "Eur ml," "Lep d 1," "Der p 2," "Der f2," "Blot 2," "Eur m 2," "Lep d 2," "Blot 5," "Der p 5," "Der f 5," "Eur m 5," "Lep d 5," "Der p 15," "Der f 15," "Blot 15," "Eur m 15," and "Lep d 15"; Claim 141 recites "Blo t 5-Fve," "Blot 5-FveR27A," "Blot 5-FveT29A," "Der p 2-FveR27A," "Der p 2-FveT29A," "Blo t 5-Der p 2-FveR27A," "Der p 2-Fve," "GST-Der p 2-FveR27A," "GST-Der p 2-FveT29A," and "Blot 5-Der p 2-FveT29A"; Claim 147 recites "Fve"; Claims 149 recites "Fve R27A," "Fve T29A," "GST-Fve R27A" and "GST-Fve T29A"; Claim 150 recites "the Fve polypeptide"; and Claim 155 recites "Blot 5-Fve," "Blot 5-FveR27A," "Blo t 5-FveT29A," "Der p 2-FveR27A," "Der p 2-FveT29A," "Blo t 5-Der p 2-FveR27A," "Der p 2-Fve," "GST-Der p 2-FveR27A," "GST-Der p 2-FveT29A,' "Blot 5-Der p 2-FveT29A," "HPV E7-FveT29A," "HCV Core23-FveT29A," "MAGE3-FveT29A," "MART1-FveT29A," "CEA-FveT29A," "Fve R27A," "Fve T29A," "GST-Fve R27A" and "GST-Fve T29A."

These terms are indefinite because they only describe the polypeptides and proteins of interest by arbitrary names. While the name may have some notion of the specificity of the polypeptides and proteins, there is no recitation which distinctly claims the polypeptides and proteins. For example, others in the field may isolate the same polypeptides and proteins and give them entirely different names. Applicants should particularly point out and distinctly claim the polypeptides and proteins by claiming a sufficient number of characteristics associated with the protein. Claiming biochemical molecules by a particular name given to them by various workers in the field fails to distinctly claim the protein.

B. Claim 148 recites "the sequence RGT," and "the sequence RGD"; and Claim 154 recites "CGT GGT ACC," and "a sequence RGT." Although these recitations most likely are referring to amino acid and nucleic acids sequences, these recitations could also be referring to molecule names. Therefore, it is requested that Applicant clarify these recitations within the claims to make the claims definite.

C. Claims 141, 147, 149 and 155 recite specific mutants by amino acid residues making the claims indefinite. An inserted reference sequence identification number to show exactly where the mutants are different from the reference sequence would make the claims definite. The claims lack the requisite structural features for the composition. Further, the numbering of the residues will differ depending on whether the reference sequence is the mature or pro-form.

D. The recitation of "expressing a fusion protein from the resulting construct" in claim 150 is indefinite because the nucleic acid is not in a vector so it is unclear how a nucleic acid will be expressed without a promoter.

E. Claim 154 recites "a sequence which differs from the above." It is unclear what sequence "above" to which Applicant refers.

F. Claim 147 recites "the second portion comprises between 2 to 20 residues of amino acid sequence flanking the glycine residue corresponding to position 28 of Fve." The Examiner does not understand if Applicant intends to have 2-20 amino acids on either side of the glycine residue or both sides. Also, it is unclear whether there are to be 2-20 amino acids total or whether there are to be 2-20 amino acids per side. As recited, the claims could read on a glycine residue with one amino acid on each side or it could refer to 41 amino acid long peptide with a glycine residue in the middle.

G. Claim 140 recites a number of allergens. The Examiner does not know if all allergens of a group (i.e. group 1 allergens) are to be selected or if one particular allergen (i.e. Der p 2) is to be selected.

H. Claims 141 and 149 recite "the polypeptide sequences of which are as shown in Appendix A" in the middle of a Markush format list. It is unclear if this recitation is another member of the list or if it is reciting limitations regarding recited allergens/polypeptides in the list. If it is referring to allergens/polypeptides in the list, it can be referring to allergens/polypeptides listed before or after the recitation.

I. Claim 155 recites the construct "comprises a sequence." However, it seems that the claim is in improper Markush format and should recite "a sequence selected from the

group consisting of." Within each of options (a) through (e) there are a number of molecules listed. The Examiner does not know if all molecules of the group are to be selected or if one particular molecule is to be selected. Applicant is requested to clarify what they intend by proper Markush language and/or punctuation. Also, Claim 155 recites "the nucleic acids sequences of which are as shown in Appendix A" a number of times in the middle of the list. It is unclear if this recitation is another member of the list or if it is reciting limitations regarding recited allergens/polypeptides in the list. If it is referring to allergens/polypeptides in the list, it can be referring to allergens/polypeptides listed before or after the recitation.

J. Claim 154 recites the limitation "the second nucleic acid" in line 1; Claim 155 recites the limitation "the construct" in line 1; Claim 156 recites the limitation "the construct" in line 1; Claim 157 recites the limitation "the formed construct" in line 2. There is insufficient antecedent bases for these limitations in the claims.

K. Claim 138 recites "a polypeptide having at least 70% sequence identity" but does not recite a reference sequence. Therefore, it is unclear what sequences have 70% sequence identity to an unspecified sequence.

Correction is required.

9. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

10. Claims 138-141, 147-150 and 154-157 *are* rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for: a method for producing the fusion proteins of SEQ ID NO:44 and 46, does not provide reasonable enablement for: a method for producing a polypeptide capable of stimulating an immune response against a molecule, the method comprising: (a) identifying a molecule against which the stimulation of the immune response is desired; and (b) forming a fusion protein by joining **the molecule** as a first portion thereof with a second portion being **an Fve polypeptide; in which the Fve polypeptide comprises the polypeptide sequence shown as "Fve (Wild Type)" in Appendix A, a fragment thereof comprising at least 20 amino acids or a polypeptide having at least 70% sequence identity thereto**, which polypeptide or fragment comprises immunomodulatory activity of claim 138; the method of Claim 138, in which the first portion comprises **an allergen or a fragment thereof** of claim 139; the method of Claim 139, in which **the allergen comprises an allergen from a mite from Family *Glycyphagidae* or Family *Pyroglyphidae,* which allergen comprises a group 1 allergen (Der p 1, Der f 1, Blo t 1, Eur ml, Lep d 1), a group 2 allergen (Der p 2, Der f2, Blot 2, Eur m 2, Lep d 2), a group 5 allergen (Blot 5, Der p 5, Der f 5, Eur m 5, Lep d 5) or a group 15 allergen (Der p 15, Der f 15, Blot 15, Eur m 15, Lep d 15) of claim 140; the method of Claim 138, which polypeptide is selected from the group consisting of: Blo t 5-Fve, Blot 5-FveR27A, Blot 5-FveT29A, Der p 2-FveR27A, Der p 2-FveT29A, Blo t 5-Der p 2-FveR27A, the polypeptide sequences of which are as shown in Appendix A, Der p 2-Fve, GST-Der p 2-FveR27A, GST-Der p 2-FveT29A, and Blot 5-Der p 2-FveT29A** of claim 141; the method of Claim 138, in which the second portion **comprises between 2 to 20 residues**

of amino acid sequence flanking the glycine residue corresponding to position 28 of Fve of claim 147; the method of any Claim 147, in which the second portion **comprises the sequence RGT or the sequence RGD** of claim 148; the method of Claim 148 in which the polypeptide **comprises a sequence selected from the group consisting of: Fve R27A, Fve T29A, the polypeptide sequences of which are as shown in Appendix A, GST-Fve R27A and GST-Fve T29A** of claim 149; the method of Claim 138, in which the fusion protein is formed by joining **a first nucleic acid sequence encoding the molecule against which the stimulation of the immune response is desired to a second nucleic acid sequence encoding the Fve polypeptide** and expressing a fusion protein from the resulting construct of claim 150; the method of Claim 138, in which **the second nucleic acid comprises CGT GGT ACC, or a sequence which differs from the above by virtue of the degeneracy of the genetic code and which encodes a sequence RGT** of claim 154; the method of Claim 138, in which **the construct comprises a sequence (a) Blot 5-Fve, Blot 5-FveR27A, Blo t 5-FveT29A, Der p 2-FveR27A, Der p 2-FveT29A, Blo t 5-Der p 2-FveR27A, the nucleic acid sequences of which are as shown in Appendix A, Der p 2-Fve, GST-Der p 2-FveR27A, GST-Der p 2-FveT29A, or Blot 5-Der p 2-FveT29A; (b) HPV E7- FveT29A or HCV Core23-FveT29A, the nucleic acid sequences of which are as shown in Appendix A; (c) MAGE3-FveT29A, MART1-FveT29A or CEA-FveT29A, the nucleic acid sequences of which are as shown in Appendix A; or (d) Fve R27A, Fve T29A, the nucleic acid sequences of which are as shown in Appendix A, GST-Fve R27A or GST-Fve T29A** of claim 155. The specification does not enable any person skilled in the art to which it

pertains, or with which it is most nearly connected, to make and or use the invention commensurate in scope with this claim.

The specification disclosure does not enable one skilled in the art to practice the invention without an undue amount of experimentation.

Factors to be considered in determining whether undue experimentation is required to practice the claimed invention are summarized *In re Wands* (858 F2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988)). The factors most relevant to this rejection are the scope of the claim, the amount of direction or guidance provided, the lack of sufficient working examples, the unpredictability in the art and the amount of experimentation required to enable one of skill in the art to practice the claimed invention.

The specification discloses in the Appendix on page 165 the fusion proteins of SEQ ID NO:44 and 46 and in a method for their production in Example 13 on pages 117-121 and Figure 16.

As discussed *supra* with regard to the 112, second paragraph rejections, the specification has not adequately disclosed a method for producing the "named" allergens, polypeptides and fusion proteins recited in claims 138,140-141, 149-150 and 155. Without a recitation of the structure associated with the named allergens, polypeptides and fusion proteins, one of ordinary skill in the art would be required to perform undue

experimentation to make and/or use the named allergens, polypeptides and fusion proteins commensurate in scope with the claims.

The specification has not adequately disclosed the genus of all allergens, group 1 allergens, group 2 allergens, group 5 allergens or group 15 allergens. The terms read on any known or unknown allergens having any number of additions, deletions and/or substitutions. The specification has not adequately disclosed a method for the production of fusion proteins comprising the genus of such allergens and allergen derivatives commensurate in scope with the claims.

It is unpredictable as to what allergens, derivatives and subportions of the genus of all known or unknown allergens and derivatives thereof that in the context of the fusion protein will stimulate an immune response for use in the instant claimed invention and as disclosed by the specification to be used for diagnostic and therapeutic purposes.

Blumenthal et al. teaches that correlations between structure and IgE binding (allergenicity) cannot be predicted on an a priori structural basis (PTO-892, Reference U, see entire document and page 39 of third full paragraph). The recited polypeptides, allergens and fusion proteins include having structures that could affect antibody binding. The art recognizes that antibody-antigen binding is highly unpredictable. Colman *et al* teaches that single amino acid changes in an antigen can effectively abolish antibody antigen binding (PTO-892, Reference V, whole document). Therefore, it is highly unpredictable whether the recited polypeptides, allergens and fusion proteins can be used

to stimulate and immune response to the allergen and what would qualify as an allergen commensurate in scope with the claims. Therefore, it would require an undue amount of experimentation to practice the invention commensurate in scope with the claims.

The specification does not adequately disclose the use of any fragment or 70% sequence identical derivative of the Fve polypeptide. Skolnick et al. teaches that sequence-based methods for function prediction are inadequate and knowing a protein's structure, i.e., amino acid sequence, does not necessary tell one its function (PTO-892, Reference W, entire document and abstract). Attwood et al. teaches that protein function is context-dependent and the state of the art of making functional assignments merely on the basis of some degree of similarity between sequences and the current structure prediction methods is unreliable (PTO-892, Reference X, entire document). Therefore, it is unpredictable whether any fragment or 70% sequence identical derivative will share the requisite function will full-length Fve polypeptide. One of ordinary skill in the art would be required to perform undue experimentation to produce the genus of fusion proteins encompassed by the instant claim recitation having the requisite function of being capable of stimulating an immune response against the allergen without undue experimentation.

The recitation of "a polypeptide capable of stimulating an immune response" in claim 138 is not sufficiently limiting for the function of the genus of polypeptides encompassed by the instant claim recitation, as all immune responses are encompassed.

Also at issue is whether or not the claimed composition would function as a pharmaceutical composition. The specification discloses the use of pharmaceutical composition for therapy, but fails to disclose an animal model that when given the recited pharmaceutical composition had a statistically significant reduction in allergic symptoms compared to control. The art of allergen immunotherapy as taught by Tarzi et al. (PTO-892; Page 2; Reference U) teaches that whole allergen immunotherapy is unpredictable due to the retention of B-ell epitopes within the allergen which confers a risk of IgE-mediated potentially life-threatening systemic reactions (In particular, paragraph spanning pages 617-618, whole document) In view of the absence of a specific and detailed description in Applicant's specification of how to effectively use the pharmaceutical composition as claimed, absence of working examples providing evidence which is reasonably predictive that the claimed pharmaceutical compositions are effective for in vivo use, and the lack of predictability in the art at the time the invention was made, an undue amount of experimentation would be required to practice the claimed pharmaceutical composition with a reasonable expectation of success.

Substantiating evidence may be in the form of animal tests, which constitute recognized screening procedures with clear relevance to efficacy in humans. See Ex parte Krepelka, 231 USPQ 746 (Board of Patent Appeals and Interferences 1986) and cases cited therein. Ex parte Maas, 9 USPQ2d 1746. It is not enough to rely on in vitro studies where, as here, a person having ordinary skill in the art has no basis for perceiving those studies as constituting recognized screening procedures with clear relevance to efficacy in humans or animals. Ex parte Maas, 9 USPQ2d 1746.

Reasonable correlation must exist between the scope of the claims and scope of the enablement set forth. In view on the quantity of experimentation necessary the limited working examples, the nature of the invention, the state of the prior art, the unpredictability of the art and the breadth of the claims, it would take undue trials and errors to practice the claimed invention.

11. Claims 138-141, 147-150 and 154-157 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Applicant is in possession of : a method for producing the fusion proteins of SEQ ID NO:44 and 46.

Applicant is not in possession of: a method for producing a polypeptide capable of stimulating an immune response against a molecule, the method comprising: (a) identifying a molecule against which the stimulation of the immune response is desired; and (b) forming a fusion protein by joining **the molecule** as a first portion thereof with a second portion being **an Fve polypeptide; in which the Fve polypeptide comprises the polypeptide sequence shown as "Fve (Wild Type)" in Appendix A, a fragment thereof comprising at least 20 amino acids or a polypeptide having at least 70% sequence identity thereto**, which polypeptide or fragment comprises

immunomodulatory activity of claim 138; the method of Claim 138, in which the first portion comprises **an allergen or a fragment thereof** of claim 139; the method of Claim 139, in which **the allergen comprises an allergen from a mite from Family *Glycyphagidae* or Family *Pyroglyphidae,* which allergen comprises a group 1 allergen (Der p 1, Der f 1, Blo t 1, Eur ml, Lep d 1), a group 2 allergen (Der p 2, Der f2, Blot 2, Eur m 2, Lep d 2), a group 5 allergen (Blot 5, Der p 5, Der f 5, Eur m 5, Lep d 5) or a group 15 allergen (Der p 15, Der f 15, Blot 15, Eur m 15, Lep d 15) of claim 140; the method of Claim 138, which polypeptide is selected from the group consisting of: Blo t 5-Fve, Blot 5-FveR27A, Blot 5-FveT29A, Der p 2-FveR27A, Der p 2-FveT29A, Blo t 5-Der p 2-FveR27A, the polypeptide sequences of which are as shown in Appendix A, Der p 2-Fve, GST-Der p 2-FveR27A, GST-Der p 2-FveT29A, and Blot 5-Der p 2-FveT29A** of claim 141; the method of Claim 138, in which the second portion **comprises between 2 to 20 residues of amino acid sequence flanking the glycine residue corresponding to position 28 of Fve of** claim 147; the method of any Claim 147, in which the second portion **comprises the sequence RGT or the sequence RGD** of claim 148; the method of Claim 148 in which the polypeptide **comprises a sequence selected from the group consisting of: Fve R27A, Fve T29A, the polypeptide sequences of which are as shown in Appendix A, GST-Fve R27A and GST-Fve T29A** of claim 149; the method of Claim 138, in which the fusion protein is formed by joining **a first nucleic acid sequence encoding the molecule against which the stimulation of the immune response is desired to a second nucleic acid sequence encoding the Fve polypeptide** and expressing a fusion protein from the resulting construct of claim 150; the method of Claim 138, in which **the second nucleic**

acid comprises CGT GGT ACC, or a sequence which differs from the above by virtue of the degeneracy of the genetic code and which encodes a sequence RGT of claim 154; the method of Claim 138, in which **the construct comprises a sequence (a) Blot 5-Fve, Blot 5-FveR27A, Blo t 5-FveT29A, Der p 2-FveR27A, Der p 2-FveT29A, Blo t 5-Der p 2-FveR27A, the nucleic acid sequences of which are as shown in Appendix A, Der p 2-Fve, GST-Der p 2-FveR27A, GST-Der p 2-FveT29A, or Blot 5-Der p 2-FveT29A; (b) HPV E7- FveT29A or HCV Core23-FveT29A, the nucleic acid sequences of which are as shown in Appendix A; (c) MAGE3-FveT29A, MART1-FveT29A or CEA-FveT29A, the nucleic acid sequences of which are as shown in Appendix A; or (d) Fve R27A, Fve T29A, the nucleic acid sequences of which are as shown in Appendix A, GST-Fve R27A or GST-Fve T29A** of claim 155.

Applicant has disclosed only a method for producing the fusion proteins of SEQ ID NO:44 and 46; therefore, the skilled artisan cannot envision all the contemplated method possibilities recited in the instant claims. Consequently, conception cannot be achieved until a representative description of the structural and functional properties of the claimed invention has occurred, regardless of the complexity or simplicity of the method. Adequate written description requires more than a mere statement that it is part of the invention. See *Fiers v. Revel*, 25 USPQ2d 1601, 1606 (CAFC1993). The Guidelines for the Examination of Patent Application Under the 35 U.S.C.112, ¶1"Written Description" Requirement make clear that the written description requirement for a claimed genus may be satisfied through sufficient description of a representative number of species disclosure of relevant, identifying characteristics, i.e., structure or

other physical and or chemical properties, by functional characteristics coupled with a known or disclosed correlation between function and structure, or by a combination of such identifying characteristics, sufficient to show the applicant was in possession of the genus (Federal Register, Vol. 66, No. 4, pages 1099-1111, Friday January 5, 20001, see especially page 1106 3rd column).

Vas-Cath Inc. v. Mahurkar, 19 USPQ2d 1111, makes clear that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention. The invention is, for purposes of the written description inquiry, whatever is now claimed." (See page 1117.) The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." (See Vas-Cath at page 1116.). Consequently, Applicant was not in possession of the instant claimed invention. See University of California v. Eli Lilly and Co. 43 USPQ2d 1398.

Applicant is directed to the final Guidelines for the Examination of Patent Applications Under the 35 U.S.C. 112, ¶ 1 "Written Description" Requirement, Federal Register, Vol. 66, No. 4, pages 1099-1111, Friday January 5, 2001.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claims 138-141 and 155-157 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication 2004/0071718 (PTO-892; Reference A) in view of Ko et al. (IDS filed on 10/17/2005; Reference BG).

U.S. Patent Application Publication 2004/0071718 teaches a method for producing a pharmaceutical composition comprising a Der p 2 first portion and a Fve-polypeptide FIP (In particular, whole document). The reference also teaches that allergen immunotherapy, though a realistic means of controlling allergies, is associated with life-threatening anaphylactic reactions (In particular, paragraph [0005] and that a mixture of Der p 2 and Fve polypeptide FIP improves hyposensitization without adverse events (In particular, paragraph [0023], whole document).

The claimed invention differs from the prior art in the recitation of "A method for producing a polypeptide capable of stimulating an immune response against a molecule, the method" and "forming a fusion protein by joining the molecule as a first portion thereof with a second portion being an Fve polypeptide" of claim 138; "the first portion comprises an allergen" of claim 139; the allergen comprises an allergen from a mite from Family *Glycyphagidae* or Family *Pyroglyphidae,* which allergen comprises Der p 2 of claim 140; the polypeptide is selected from the group consisting of Der p 2-Fve of claim 141; the construct comprises a sequence Der p 2-Fve of Claim 137, "the construct comprises an expression vector" of claim 156; and "the method further comprises introducing the formed construct into a bacterium of claim 157.

Ko et al. teaches a method for producing a Fve-GST fusion protein by amplifying the Fve cDNA, ligating it into an expression vector pGEX-2T and expressing the GST-fusion protein (joining the Fve and GST molecules) in E.coli (bacteria) (In particular, abstract, whole document).

It would have been obvious to one of ordinary skill in the art at the time of invention to produce a Der p 2-Fve fusion protein by joining the Der p 2 allergen with the Fve polypeptide because Ko et al. teaches that Fve-GST fusion proteins can be made and U.S. Application Publication 2004/00718 teaches that Der p 2 allergen and Fve polypeptide can be administered together in vivo to treat allergies that are known to cause anaphylactic shock. It would be obvious to put the molecules together and produce one fusion protein (Der p 2-Fve) with both components rather than to administer them together in order to increase the likelihood that anaphylactic shock would be avoided.

From the reference teachings, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the reference, especially in the absence of evidence to the contrary.

14. No claim is allowed.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nora M. Rooney whose telephone number is (571) 272-9937. The examiner can normally be reached Monday through Friday from 8:30 am to 5:00 pm. A message may be left on the examiner's voice mail service. If attempts to

reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eileen O'Hara can be reached on (571) 272-0878. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

December 18, 2008

Nora M. Rooney

Patent Examiner

/Maher M. Haddad/

Primary Examiner,

Art Unit 1644